



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-205



## Integrated Air and Missile Defense (IAAMD)

As of FY 2015 President's Budget

Defense Acquisition Management  
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(DAMIR)

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## Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
BA - Budget Authority/Budget Activity  
BY - Base Year  
DAMIR - Defense Acquisition Management Information Retrieval  
Dev Est - Development Estimate  
DoD - Department of Defense  
DSN - Defense Switched Network  
Econ - Economic  
Eng - Engineering  
Est - Estimating  
FMS - Foreign Military Sales  
FY - Fiscal Year  
IOC - Initial Operational Capability  
\$K - Thousands of Dollars  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MILCON - Military Construction  
N/A - Not Applicable  
O&S - Operating and Support  
Oth - Other  
PAUC - Program Acquisition Unit Cost  
PB - President's Budget  
PE - Program Element  
Proc - Procurement  
Prod Est - Production Estimate  
QR - Quantity Related  
Qty - Quantity  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
Sch - Schedule  
Spt - Support  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting

## Program Information

**Program Name**

Integrated Air and Missile Defense (IAMD)

**DoD Component**

Army

## Responsible Office

**Responsible Office**

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## References

**SAR Baseline (Development Estimate)**

FY 2011 President's Budget dated February 1, 2010

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 20, 2012

## Mission and Description

The mission of the Army Integrated Air and Missile Defense (IAMD) Project Office (PO) is to define, develop, acquire, field and sustain the Army's portion of the Joint IAMD System of Systems capability to be deployed as integrated components in Army, Joint, Interagency, Inter-Governmental and Multi-National net-centric architectures. Additionally, the IAMD PO will develop, acquire, field and sustain the IAMD Battle Command System (IBCS) component of the architecture and integrate externally developed sensors and shooters to provide an effective IAMD capability.

The IAMD program will allow transformation to a network-centric system of systems capability (also referred to as "Plug and Fight") that integrates all Air and Missile Defense (AMD) sensors, weapons, and mission control. The IAMD program will integrate the Patriot and Improved Sentinel components to support the engagement of air breathing targets, cruise missiles, unmanned aerial vehicles, and the tactical ballistic missiles threat. Each sensor and weapon platform will have a "Plug and Fight" interface module, which supplies distributed battle management functionality to enable network-centric operations. Additionally, the IBCS functionality will be incorporated into Air Defense Airspace Management Cells, Air Defense Artillery Brigade Headquarters, and Army Air and Missile Defense Command Headquarters.

The common IBCS provides the functional capabilities to control and manage the IAMD sensors and weapons via the Integrated Fire Control Network capability for fire control connectivity and enabling distributed operations. Central to the IAMD program is the IBCS Development Program consisting of the IBCS Major End Items (MEI); the Engagement Operations Center and "Plug and Fight" modules. The development of these MEIs is essential to achieving Army transformation imperatives, connectivity to the Global Interface Grid for Joint operations, obtaining a Joint Single Integrated Air Picture, establishing Engage on Network capabilities, enabling Net-Ready operations for Army AMD components, and providing a common IAMD mission command capability. This innovative approach at modernization will reduce O&S costs and will enhance training.

## Executive Summary

The IAMD Project Office (PO) hosted the Army Acquisition Executive on a software deep dive into the Northrop Grumman IAMD Battle Command System (IBCS) software development efforts on April 3, 2013. IAMD PO, senior Northrop Grumman officials, and independent software engineers provided an in-depth analysis of the current status of IBCS software design progress. Based on this analysis, the IAMD Project Manager proposed a replan for the IBCS software development. The IAMD PO is proceeding in accordance with the development replan.

The IAMD PO briefed at the Defense Acquisition Executive Summary Review on September 16, 2013. The purpose of the brief was to provide an update on the software replan activities for the Northrop Grumman software effort and to provide an update on the test asset issue resulting from the loss of the Test Battalion from 32nd Army Air and Missile Defense Command (AAMDC).

The 2013 Army IAMD Demonstration was conducted October 22, 2013 through November 6, 2013. The purpose was to demonstrate a 2013 “snap-shot” of development efforts focused on achieving common AAMDC capability from the Brigade Combat Teams Air Defense Air Space Management/Brigade Aviation Element to the AAMDC.

In October 2012, programmatic issues with IBCS Software requirements collapse, software performance, and a desire to place increased emphasis on flight test objectives and hardware deferrals resulted in an Undefined Contract Action (UCA) issued to Northrop Grumman. The outstanding UCA was definitized January 17, 2014. Northrop Grumman will be authorized to replan efforts directly affected by UCA definitization. This replan data is reflected in the February Earned Value submission.

The schedule breach is a result of the Army's decision to defer IOC from FY 2016 to FY 2018 due to budget reductions based on the FY 2015 PB. A Program Deviation Report is in the submission process to provide notification that the current estimate for the IAMD Schedule milestones are projected to exceed current APB thresholds for Milestone C, Initial Operational Test and Evaluation start and completion, IOC, and Full Rate Production.

There are no significant software-related issues with this program at this time.

## Threshold Breaches

### APB Breaches

<b>Schedule</b>		<input checked="" type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>O&amp;S Cost</b>		<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

### Explanation of Breach

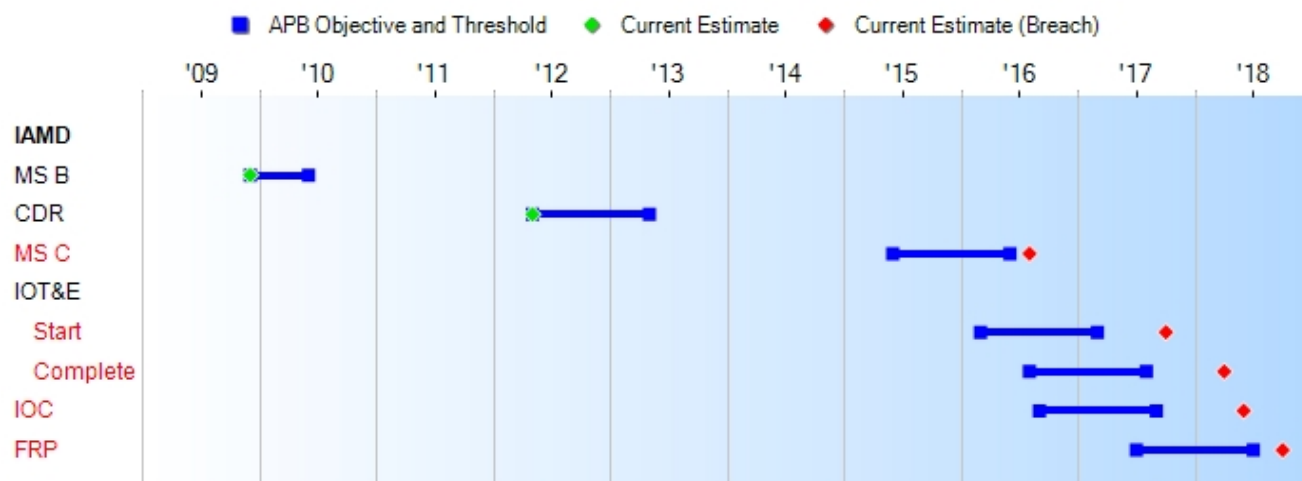
The schedule breach is a result of the Army's decision to defer Initial IOC from FY 2016 to FY 2018 due to budget reductions based on the FY 2015 PB. A Program Deviation Report is in the submission process to provide notification that the current estimate for the IAMD Schedule milestones are projected to exceed current APB thresholds for Milestone C, Initial Operational Test and Evaluation start and completion, IOC, and Full Rate Production.

### Nunn-McCurdy Breaches

<b>Current UCR Baseline</b>		
	PAUC	None
	APUC	None
<b>Original UCR Baseline</b>		
	PAUC	None
	APUC	None



## Schedule



Milestones	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate
MS B	DEC 2009	DEC 2009	JUN 2010	DEC 2009
CDR	AUG 2011	MAY 2012	MAY 2013	MAY 2012
MS C	DEC 2014	JUN 2015	JUN 2016	<b>AUG 2016<sup>1</sup></b> (Ch-1)
IOT&E				
Start	JAN 2016	MAR 2016	MAR 2017	<b>OCT 2017<sup>1</sup></b> (Ch-1)
Complete	JUL 2016	AUG 2016	AUG 2017	<b>APR 2018<sup>1</sup></b> (Ch-1)
IOC	AUG 2016	SEP 2016	SEP 2017	<b>JUN 2018<sup>1</sup></b> (Ch-1)
FRP	MAY 2017	JUL 2017	JUL 2018	<b>OCT 2018<sup>1</sup></b> (Ch-1)

<sup>1</sup>APB Breach

### Change Explanations

(Ch-1) Based on the FY 2015 PB the following current estimates have changed due to budget reductions and the Army's decision to defer IOC to FY 2018:

MS C changed from June 2015 to August 2016

IOT&E Start changed from March 2016 to October 2017

IOT&E Completion changed from August 2016 to April 2018

IOC changed from September 2016 to June 2018

FRP changed from July 2017 to October 2018

**Acronyms and Abbreviations**

CDR - Critical Design Review

FRP - Full Rate Production

IOT&E - Initial Operational Test and Evaluation

MS - Milestone

## Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Net Ready	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 •DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services •Inf	The Army IAMD SoS must fully support execution of all operational activities identified in the applicable joint and system integrated architectures, and the system must satisfy the technical requirements for Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA requirements	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA	TBD	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1. DISR mandated GIG KIPs identified in the KIP declaration table. NCOW RM Enterprise Services. Information

	<p>ormation assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA •Operat</p> <p>ionally effective information exchanges • Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.</p>	<p>including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA</p> <p>Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.</p>	<p>requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA</p> <p>Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.</p>		<p>assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA.</p> <p>Operationally effective information exchanges. Mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.</p>
Integrated Defense Effectiveness	To support attainment of a commander's defense effectiveness objectives, which would normally	To support attainment of a commander's defense effectiveness objectives, which would normally	To support attainment of a commander's defense effectiveness objectives, which would normally	TBD	To support attainment of a commander's defense effectiveness objectives, which would

	range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of	range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing	range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing		normally range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be
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	allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.		capable of allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.
Common Command and Control	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	TBD	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,

	battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.		battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force PATRIOT Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.
Material Availability	The Army IAMD SoS C2 shall achieve an Operational Availability (Ao) of at least 95%.	The Army IAMD SoS common C2 shall achieve an Ao 99%.	The Army IAMD SoS common C2 shall achieve an Ao of at least 95%.	TBD	The Army IAMD SoS C2 shall achieve an Ao of at least 95%.
Force Protection and Survivability	The Army IAMD SoS common C2 equipment shall be designed to	All Army IAMD SoS common C2 vehicle cabs and manned shelters shall	The Army IAMD SoS common C2 equipment shall be designed to	TBD	The Army IAMD SoS common C2 equipment shall be designed to

be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understanding commensurate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontamination procedures in such a manner that it can quickly return (within 30 minutes) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor	be capable of adding up-armor protection sufficient to repel enemy small arms as developed by the PM, FMTV. All equipment manned during transport or operations shall mitigate the effects of 7.62mm rounds and below.	be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understanding commensurate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontamination procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor	be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understanding commensurate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontamination procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor
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	protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.		protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.		protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.
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**Requirements Source**

Capability Development Document (CDD) dated May 17, 2010

**Change Explanations**

None

**Acronyms and Abbreviations**

ABT - Air Breathing Threat  
Ao - Operational Availability  
ATO - Approval to Operate  
BFT - Blue Force Tracking  
C2 - Command and Control  
CBRNE - Chemical, Biological, Radiological, Nuclear and High Yield Explosives  
CM - Cruise Missile  
COP - Common Operating Picture  
DAA - Designated Approval Authority  
DISR - DoD Information Technology Standards Registry  
FMTV - Family of Medium Tactical Vehicles  
GIG IT - Global Information Grid Information Technology  
IA - Information Assurance  
ID - Identification  
KIP - Key Information Profile  
MOPP - Mission Oriented Protective Posture  
NCOW RM - Net-Centric Operations and Warfare Reference Model  
PM - Product Manager  
SLAMRAAM - Surface-Launched Advanced Medium Range Air-to-Air Missile  
SoS - System of Systems  
TBM - Tactical Ballistic Missile  
TV - Technical View, Standards Profile

## Track to Budget

### RDT&E

Appn		BA	PE	
Army	2040	04	0603327A	
	<b>Project</b>		<b>Name</b>	
	S34		AMD System of Systems Engineering and Integration	(Sunk)
Army	2040	05	0605457A	
	<b>Project</b>		<b>Name</b>	
	DU4		Advanced Electronic Protection Enhancements	(Sunk)
	S40		Army Integrated Air and Missile Defense	
	<b>Notes:</b>		Army IAMD Project Office Engineering and Manufacturing Development program funding began in FY 2011.	

### Procurement

Appn		BA	PE	
Army	2035	02	0214400A	
	<b>Line Item</b>		<b>Name</b>	
	BZ5075		IAMD Battle Command System	

## Cost and Funding

### Cost Summary

#### Total Acquisition Cost and Quantity

Appropriation	BY2009 \$M			BY2009 \$M	TY \$M		
	SAR Baseline Dev Est	Current APB Development Objective/Threshold	Current Estimate		SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	1540.6	2199.5	2419.5	2331.4	1627.5	2402.6	2599.0
Procurement	3316.0	3174.8	3492.3	3358.3	4164.1	3939.2	4412.9
Flyaway	--	--	--	3205.8	--	--	4212.0
Recurring	--	--	--	3201.8	--	--	4207.4
Non Recurring	--	--	--	4.0	--	--	4.6
Support	--	--	--	152.5	--	--	200.9
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	152.5	--	--	200.9
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	4856.6	5374.3	N/A	5689.7	5791.6	6341.8	7011.9

Confidence Level for Current APB Cost 50% -

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs. Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	11	16	16
Procurement	285	431	427
Total	296	447	443

The IAMD Unit of Measure - 16 Fully Configured RDT&E units and 427 IAMD Battle Command Systems Procurement Quantities which enable System of Systems operation of Air and Missile Defense Units as defined in the IAMD Capability Development Document.

## Cost and Funding

### Funding Summary

#### Appropriation and Quantity Summary FY2015 President's Budget / December 2013 SAR (TY\$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	1143.5	369.5	142.6	215.7	228.8	170.8	154.6	173.5	2599.0
Procurement	0.0	0.0	0.0	21.1	206.3	298.9	379.9	3506.7	4412.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2015 Total	1143.5	369.5	142.6	236.8	435.1	469.7	534.5	3680.2	7011.9
PB 2014 Total	1173.5	385.8	483.6	536.7	624.5	525.4	521.0	2124.7	6375.2
Delta	-30.0	-16.3	-341.0	-299.9	-189.4	-55.7	13.5	1555.5	636.7

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	16	0	0	0	0	0	0	0	0	16
Production	0	0	0	0	0	18	24	44	341	427
PB 2015 Total	16	0	0	0	0	18	24	44	341	443
PB 2014 Total	16	0	0	17	14	62	45	50	243	447
Delta	0	0	0	-17	-14	-44	-21	-6	98	-4

## Cost and Funding

### Annual Funding By Appropriation

#### Annual Funding TY\$

#### 2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2006	--	--	--	--	--	--	23.7
2007	--	--	--	--	--	--	36.3
2008	--	--	--	--	--	--	48.0
2009	--	--	--	--	--	--	114.7
2010	--	--	--	--	--	--	164.7
2011	--	--	--	--	--	--	246.7
2012	--	--	--	--	--	--	262.0
2013	--	--	--	--	--	--	247.4
2014	--	--	--	--	--	--	369.5
2015	--	--	--	--	--	--	142.6
2016	--	--	--	--	--	--	215.7
2017	--	--	--	--	--	--	228.8
2018	--	--	--	--	--	--	170.8
2019	--	--	--	--	--	--	154.6
2020	--	--	--	--	--	--	33.6
2021	--	--	--	--	--	--	20.2
2022	--	--	--	--	--	--	30.5
2023	--	--	--	--	--	--	47.7
2024	--	--	--	--	--	--	41.5
<b>Subtotal</b>	<b>16</b>	--	--	--	--	--	<b>2599.0</b>

**Annual Funding BY\$****2040 | RDT&E | Research, Development, Test, and Evaluation, Army**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2009 \$M</b>	<b>Non End Item Recurring Flyaway BY 2009 \$M</b>	<b>Non Recurring Flyaway BY 2009 \$M</b>	<b>Total Flyaway BY 2009 \$M</b>	<b>Total Support BY 2009 \$M</b>	<b>Total Program BY 2009 \$M</b>
2006	--	--	--	--	--	--	24.8
2007	--	--	--	--	--	--	37.1
2008	--	--	--	--	--	--	48.1
2009	--	--	--	--	--	--	113.4
2010	--	--	--	--	--	--	160.4
2011	--	--	--	--	--	--	235.7
2012	--	--	--	--	--	--	246.3
2013	--	--	--	--	--	--	228.3
2014	--	--	--	--	--	--	332.3
2015	--	--	--	--	--	--	125.5
2016	--	--	--	--	--	--	186.1
2017	--	--	--	--	--	--	193.6
2018	--	--	--	--	--	--	141.7
2019	--	--	--	--	--	--	125.7
2020	--	--	--	--	--	--	26.8
2021	--	--	--	--	--	--	15.8
2022	--	--	--	--	--	--	23.4
2023	--	--	--	--	--	--	35.8
2024	--	--	--	--	--	--	30.6
<b>Subtotal</b>	<b>16</b>	--	--	--	--	--	<b>2331.4</b>

## Annual Funding TY\$

## 2035 | Procurement | Other Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2016	--	16.5	--	4.6	21.1	--	21.1
2017	18	206.3	--	--	206.3	--	206.3
2018	24	293.0	--	--	293.0	5.9	298.9
2019	44	363.5	--	--	363.5	16.4	379.9
2020	47	423.6	--	--	423.6	24.0	447.6
2021	53	418.4	--	--	418.4	27.7	446.1
2022	49	488.6	--	--	488.6	29.2	517.8
2023	39	476.2	--	--	476.2	30.6	506.8
2024	33	391.0	--	--	391.0	24.8	415.8
2025	36	394.1	--	--	394.1	22.8	416.9
2026	48	279.9	--	--	279.9	9.3	289.2
2027	34	217.0	--	--	217.0	6.2	223.2
2028	2	161.7	--	--	161.7	4.0	165.7
2029	--	77.6	--	--	77.6	--	77.6
<b>Subtotal</b>	<b>427</b>	<b>4207.4</b>	<b>--</b>	<b>4.6</b>	<b>4212.0</b>	<b>200.9</b>	<b>4412.9</b>



**Annual Funding BY\$****2035 | Procurement | Other Procurement, Army**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2009 \$M</b>	<b>Non End Item Recurring Flyaway BY 2009 \$M</b>	<b>Non Recurring Flyaway BY 2009 \$M</b>	<b>Total Flyaway BY 2009 \$M</b>	<b>Total Support BY 2009 \$M</b>	<b>Total Program BY 2009 \$M</b>
2016	--	14.2	--	4.0	18.2	--	18.2
2017	18	174.2	--	--	174.2	--	174.2
2018	24	242.6	--	--	242.6	4.9	247.5
2019	44	295.1	--	--	295.1	13.3	308.4
2020	47	337.1	--	--	337.1	19.1	356.2
2021	53	326.5	--	--	326.5	21.6	348.1
2022	49	373.8	--	--	373.8	22.3	396.1
2023	39	357.1	--	--	357.1	23.0	380.1
2024	33	287.5	--	--	287.5	18.2	305.7
2025	36	284.1	--	--	284.1	16.4	300.5
2026	48	197.8	--	--	197.8	6.6	204.4
2027	34	150.3	--	--	150.3	4.3	154.6
2028	2	109.8	--	--	109.8	2.8	112.6
2029	--	51.7	--	--	51.7	--	51.7
<b>Subtotal</b>	<b>427</b>	<b>3201.8</b>	<b>--</b>	<b>4.0</b>	<b>3205.8</b>	<b>152.5</b>	<b>3358.3</b>

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**Cost Quantity Information****2035 | Procurement | Other Procurement, Army**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway (Aligned with Quantity) BY 2009 \$M</b>
2016	--	--
2017	18	188.4
2018	24	242.6
2019	44	295.1
2020	47	337.1
2021	53	326.5
2022	49	373.8
2023	39	357.1
2024	33	287.5
2025	36	284.1
2026	48	197.8
2027	34	150.3
2028	2	161.5
2029	--	--
<b>Subtotal</b>	<b>427</b>	<b>3201.8</b>

**Low Rate Initial Production**

	<b>Initial LRIP Decision</b>	<b>Current Total LRIP</b>
<b>Approval Date</b>	12/23/2009	2/1/2012
<b>Approved Quantity</b>	27	31
<b>Reference</b>	Milestone B ADM	Restructure ADM
<b>Start Year</b>	2015	2015
<b>End Year</b>	2016	2016

## Foreign Military Sales

IAMD participated in a FY 2012 Office of the Secretary of Defense Defense Exportability Features study. The program received \$150K in FY 2013 for refinement of the implementation approach.

The IAMD program is working with Army Special Programs to obtain approval for release of program information to Tier 1 and Tier 2 countries in support of future FMS.

## Nuclear Costs

None

## Unit Cost

### Unit Cost Report

	BY2009 \$M	BY2009 \$M	
Unit Cost	Current UCR Baseline (NOV 2012 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

#### Program Acquisition Unit Cost (PAUC)

Cost	5374.3	5689.7	
Quantity	447	443	
Unit Cost	12.023	12.844	+6.83

#### Average Procurement Unit Cost (APUC)

Cost	3174.8	3358.3	
Quantity	431	427	
Unit Cost	7.366	7.865	+6.77

	BY2009 \$M	BY2009 \$M	
Unit Cost	Original UCR Baseline (JUN 2010 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

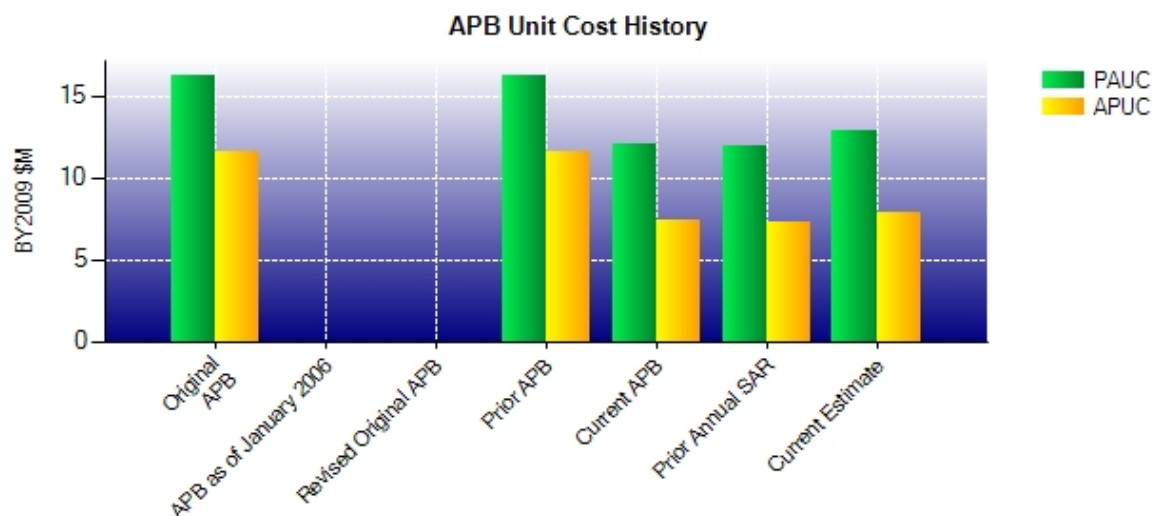
#### Program Acquisition Unit Cost (PAUC)

Cost	4806.8	5689.7	
Quantity	296	443	
Unit Cost	16.239	12.844	-20.91

#### Average Procurement Unit Cost (APUC)

Cost	3316.0	3358.3	
Quantity	285	427	
Unit Cost	11.635	7.865	-32.40

## Unit Cost History



	Date	BY2009 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	JUN 2010	16.239	11.635	19.382	14.611
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	JUN 2010	16.239	11.635	19.382	14.611
Current APB	NOV 2012	12.023	7.366	14.187	9.140
Prior Annual SAR	DEC 2012	11.923	7.242	14.262	9.140
Current Estimate	DEC 2013	12.844	7.865	15.828	10.335

## SAR Unit Cost History

### Current SAR Baseline to Current Estimate (TY \$M)

Initial PAUC Dev Est	Changes										PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total			
19.566	0.463	-1.979	-0.215	0.385	-0.219	0.000	-2.173	-3.738			15.828

## Current SAR Baseline to Current Estimate (TY \$M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.611	0.408	-0.151	-0.223	0.000	-2.055	0.000	-2.255	-4.276	10.335

## SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	DEC 2009	N/A	DEC 2009
Milestone C	N/A	DEC 2014	N/A	AUG 2016
IOC	N/A	AUG 2016	N/A	JUN 2018
Total Cost (TY \$M)	N/A	5791.6	N/A	7011.9
Total Quantity	N/A	296	N/A	443
Prog. Acq. Unit Cost (PAUC)	N/A	19.566	N/A	15.828

**Cost Variance**

<b>Summary Then Year \$M</b>				
	<b>RDT&amp;E</b>	<b>Proc</b>	<b>MILCON</b>	<b>Total</b>
SAR Baseline (Dev Est)	1627.5	4164.1	--	5791.6
Previous Changes				
Economic	+46.1	+203.6	--	+249.7
Quantity	-10.8	+2068.6	--	+2057.8
Schedule	--	-264.1	--	-264.1
Engineering	+170.6	--	--	+170.6
Estimating	+602.6	-1251.1	--	-648.5
Other	--	--	--	--
Support	--	-981.9	--	-981.9
Subtotal	+808.5	-224.9	--	+583.6
Current Changes				
Economic	-14.9	-29.5	--	-44.4
Quantity	--	-58.7	--	-58.7
Schedule	--	+168.9	--	+168.9
Engineering	--	--	--	--
Estimating	+177.9	+373.8	--	+551.7
Other	--	--	--	--
Support	--	+19.2	--	+19.2
Subtotal	+163.0	+473.7	--	+636.7
Total Changes	+971.5	+248.8	--	+1220.3
CE - Cost Variance	2599.0	4412.9	--	7011.9
CE - Cost & Funding	2599.0	4412.9	--	7011.9



Summary Base Year 2009 \$M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1540.6	3316.0	--	4856.6
Previous Changes				
Economic	--	--	--	--
Quantity	-9.2	+1478.9	--	+1469.7
Schedule	--	--	--	--
Engineering	+148.7	--	--	+148.7
Estimating	+528.4	-924.1	--	-395.7
Other	--	--	--	--
Support	--	-749.5	--	-749.5
Subtotal	+667.9	-194.7	--	+473.2
Current Changes				
Economic	--	--	--	--
Quantity	--	-42.3	--	-42.3
Schedule	--	+3.0	--	+3.0
Engineering	--	--	--	--
Estimating	+122.9	+269.9	--	+392.8
Other	--	--	--	--
Support	--	+6.4	--	+6.4
Subtotal	+122.9	+237.0	--	+359.9
Total Changes	+790.8	+42.3	--	+833.1
CE - Cost Variance	2331.4	3358.3	--	5689.7
CE - Cost & Funding	2331.4	3358.3	--	5689.7

Previous Estimate: December 2012

<b>RDT&amp;E</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-14.9
Adjustment for current and prior escalation. (Estimating)	+7.8	+8.5
Revised estimate for test and integration efforts resulting from test plan changes. (Estimating)	+142.8	+199.4
Revised estimate to reflect actuals. (Estimating)	-27.7	-30.0
<b>RDT&amp;E Subtotal</b>	<b>+122.9</b>	<b>+163.0</b>

<b>Procurement</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-29.5
Adjustment for current and prior escalation. (Estimating)	+0.3	+0.3
Extension of procurement buy profile of IAMD Battle Command System (IBCS) components from FY 2014 through FY 2016 to FY 2016 through FY 2029. (Schedule)	0.0	+164.7
Total Quantity variance resulting from a decrease of four Engagement Operation Centers (EOC) from 431 to 427. (Subtotal)	-24.9	-34.5
Quantity variance resulting from a decrease of four EOCs from 431 to 427. (Quantity)	(-42.3)	(-58.7)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+3.0)	(+4.2)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+14.4)	(+20.0)
Revised estimate for IBCS components resulting from design maturation. (Estimating)	+255.2	+353.5
Revised estimate for Initial Spares. (Support)	+6.4	+19.2
<b>Procurement Subtotal</b>	<b>+237.0</b>	<b>+473.7</b>

(QR) Quantity Related

## Contracts

### Appropriation: RDT&E

Contract Name	<b>IAMD Battle Command System (IBCS) Development Program</b>
Contractor	Northrop Grumman Space & Mission Systems Corporation
Contractor Location	Huntsville, AL 35805
Contract Number, Type	W31P4Q-08-C-0418, CPIF
Award Date	December 30, 2009
Definitization Date	December 30, 2009

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
375.0	N/A	11	678.6	N/A	11	742.7	742.7

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a contract modification to implement a revised flight test program, additional support to the Government Simulation and Integration Laboratory, and support to IAMD enterprise working groups.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/24/2014)	+1.2	-0.1
Previous Cumulative Variances	-25.7	-25.9
Net Change	+26.9	+25.8

### Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to rebaselining the contractors Performance Measurement Baseline (PMB).

The favorable net change in the schedule variance is due to rebaselining the contractors PMB.

**Appropriation: RDT&E**

Contract Name	<b>A-Kit Development</b>
Contractor	Raytheon Company
Contractor Location	401 Jan Davis Dr Huntsville, AL 35806
Contract Number, Type	W31P4Q-12-C-0120, CPFF
Award Date	February 14, 2012
Definitization Date	September 19, 2012

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
126.0	N/A	0	126.0	N/A	0	130.4	130.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/26/2014)	-3.3	-1.0
Previous Cumulative Variances	+0.5	-0.1
Net Change	-3.8	-0.9

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to three major areas in software requiring more effort than planned.

The unfavorable net change in the schedule variance is due to software defects impacting the ability to complete testing.

**Deliveries and Expenditures**

<b>Delivered to Date</b>	<b>Plan to Date</b>	<b>Actual to Date</b>	<b>Total Quantity</b>	<b>Percent Delivered</b>
Development	2	2	16	12.50%
Production	0	0	427	0.00%
Total Program Quantity Delivered	2	2	443	0.45%

<b>Expended and Appropriated (TY \$M)</b>			
Total Acquisition Cost	7011.9	Years Appropriated	9
Expended to Date	1170.0	Percent Years Appropriated	37.50%
Percent Expended	16.69%	Appropriated to Date	1513.0
Total Funding Years	24	Percent Appropriated	21.58%

The above data is current as of 2/28/2014.

## Operating and Support Cost

### IAMD

#### Assumptions and Ground Rules

##### Cost Estimate Reference:

Estimate is based on initial Project Office Estimate (POE) dated February 20, 2014.

Military personnel costs are contained in the POE.

Overhaul will occur seven years after fielding.

Technology refresh will occur every five years.

Fielding of the IAMD Battle Command System and associated equipment will not increase the manpower in the Composite Battalion.

Contractor Field Service Representatives will be required during the Interim Contractor Logistics Support which will be two-years after IOC.

Demilitarization will occur after 20-years of use.

##### Sustainment Strategy:

The IAMD Program will be supported by a combination of Army organic and contractor-provided resources through a Performance Based Logistics (PBL) Product Support Strategy (PSS). Under PBL sustainment constructs, the IAMD Project Office will utilize performance based sustainment methods and performance metrics which may include a Product Support Integrator (PSI) overseeing the performance of its various Product Support Providers (PSP) from both the commercial and organic industrial support base. The decision for PSI/PSP designation will be the culmination of a formal (Type II) Business Case Analysis. The IAMD PBL PSS provides a Human Systems Integration/Manpower and Personnel Integration approach that will provide the human interface, tools, and resources needed to sustain the IAMD equipment throughout its life cycle.

There are 427 Procurement units.

The life of the equipment is 20-years.

##### Antecedent Information:

There is no antecedent system.

Unitized O&S Costs BY2009 \$K		
Cost Element	IAMD Average Annual Cost Per Unit	No Antecedent System (Antecedent)
Unit-Level Manpower	0.000	--
Unit Operations	0.800	--
Maintenance	124.500	--
Sustaining Support	91.400	--
Continuing System Improvements	62.400	--
Indirect Support	0.000	--
Other	0.000	--
Total	279.100	--

Unitized Cost Comments:

Average annual cost per unit is based on 427 units times 20-years of O&S. (Total Cost = Average Annual Cost per unit (\$279.1) \* number of units (427) \* life per unit (20-years) = \$2,383.5M (BY\$ 2009)

	Total O&S Cost \$M			
	Current Development APB Objective/Threshold		Current Estimate	
	IAMD		IAMD	No Antecedent System (Antecedent)
Base Year	2235.9	2459.5	2383.5	N/A
Then Year	3333.3	N/A	3656.5	N/A

Total O&S Costs Comments:

The O&S cost increased from the December 2012 SAR to the December 2013 SAR. The major change in O&S costs is the result of adding three years of O&S from FY 2047 to FY 2050, resulting from an extension of the procurement schedule and a change in the estimating methodology for the cost of spares, technology refresh, and maintenance overhauls.

O&S Cost Variance		
Category	Base Year 2009 \$M	Change Explanation
Prior SAR Total O&S Estimate December 2012	2,235.9	
Cost Estimating Methodology	+147.6	Revised cost estimate for unit operations, maintenance, sustaining support, and continuing system improvement cost estimating relationships.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Programmatic/Planning Factors	0.0	
Other	0.0	
Total Changes	+147.6	

Current Estimate	2,383.5	
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**Disposal Costs:**

Lifecycle demilitarization and disposal costs are \$22.3M (BY\$ 2009) and are not included in the above estimate.